



Indoor Air Quality Tools for Schools Program

Step-by-step guidance to improving the air quality in our nation's schools

The Problem

Twenty percent of the U.S. population, nearly 55 million people, spend their days in our elementary and secondary schools. Studies show that one-half of the nation's 115,000 schools have health problems linked to poor indoor air quality (IAQ) which can impact students' health. Students are at particular risk to health problems such as asthma and allergies, which are linked to common indoor pollutants found in schools.

Students are at particular risk because children are especially susceptible to indoor pollutants. Because the health and comfort of students and staff are among the many factors that contribute to learning and performance in the classroom—which in turn affect attendance and achievement—IAQ issues simply cannot be ignored.

Schools that fail to respond promptly and effectively to poor IAQ can increase individual short-term health problems, such as fatigue and nausea, and long-term health problems, such as asthma. These schools risk being shut down and having to relocate staff and students to temporary facilities. Poor IAQ may even lead to liability claims and lawsuits that can damage a school's reputation.

The Solution

IAQ Tools for Schools (IAQ TFS) is a flexible, comprehensive resource for your school building's health. The *IAQ TFS Kit* will help you identify, correct, and prevent IAQ problems. The Kit, provided to schools at no cost, includes easy-to-follow checklists, videos, sample memos and policies, a recommended management plan, and a unique IAQ problem-solving wheel. Using some or all the tools in the Kit, school officials can address IAQ problems and

educate staff, students, and parents about the importance of good IAQ and everyone's role in ensuring a healthy, comfortable learning environment. Armed with the knowledge of IAQ and commonsense preventive measures, schools can take care of most IAQ problems on their own. After all, ensuring a healthy school is an investment in your students and staff.

To learn more about the *IAQ TFS Kit*, log on to EPA's Web site at www.epa.gov/iaq/schools, or order a Kit by calling the IAQ INFO hotline at (800) 438-4318.

Awards and Recognition

The *IAQ TFS Awards* provides incentives and public recognition to schools and school districts that are implementing the Kit to ensure a healthy environment. Three award categories are offered: **Great Start**, **Leadership** and **Excellence**, each honoring schools as they progress through the different steps of the *IAQ TFS Kit*. There are school districts that have won *IAQ TFS Awards* and have demonstrated outstanding achievement and leadership in improving indoor air quality. See our Web site at www.epa.gov/iaq/schools/awards for additional information and applications.

Training and Networking Resources

Learn from the experts! Training and networking resources for schools managing indoor air quality issues are available in a number of venues. These include our annual Symposium, internet presentations, and specialized training on financing, communications, mold, and facilities maintenance. See our Web site www.epa.gov/iaq/schools/index.html for additional information.

Training Guidance on Implementing EPA's Indoor Air Quality Tools for Schools Kit

Practical Guidelines on Developing the Indoor Air Quality Management Plan (based on experiences and suggestions from schools currently implementing the kit.)

The Indoor Air Quality (IAQ) Management Plan of EPA's IAQ Tools for Schools (TfS) Kit involves implementing the following 19 steps at least once a year. Based on experiences from schools currently utilizing the kit, implementation of TfS proceeds best by having a team carry out the work.

The most successful teams have consisted of 5 to 6 persons: school principal (team coordinator), school nurse, a teacher, head of custodial staff, a concerned parent, and possibly a school business official or town health official.

In some schools, the team was appointed by the principal; in others, the principal asked for volunteers to be on the team. Ideally, the team should meet roughly once a month (about 8 times) throughout the school year for about two hours per meeting. Once a team has been assembled, the first action item is to schedule a training meeting to learn about TfS, and this training is best conducted by inviting a TfS trainer.

Call EPA's **Indoor Air Quality Hotline** at 1-800-438-4318 to obtain the names and phone numbers of EPA staff in your area who can assist you. EPA and other TfS cosponsors as well as their TfS partner affiliates are available in every state to assist you in providing hands on training, phone consultations and printed information on a variety of IAQ issues in schools.

After you have received instruction on TfS, you may begin the IAQ Management Plan which will serve as your road map in assisting you to prevent and solve IAQ problems in your school for this year and for years to come.

Below is a schedule of meetings showing what items of the IAQ Management Plan need to be covered at each meeting for optimal implementation of TfS. Please note the difference between meeting number and IAQ Management Plan Step number as listed in IAQ Coordinator's Guide in the kit.

Meeting 1 - Training on TfS

The training should be conducted in a manner that best fits the needs of the school team in solving and/or preventing IAQ problems. It is important that the trainer have an idea of what IAQ issues the school has been facing, so perhaps this might be a good way to start the meeting. Independent of what the issues are, the trainer needs to cover the following areas so that all team members understand the basics of IAQ and the approach used in TfS to address IAQ.

Here is a basic outline of what a typical training covers:

1. Introduction of trainer and team members.
2. Brief discussion of any current IAQ problems in the school.
3. Typical pollutants found in schools including health effects information.
 - condition of schools in general.
 - what sources are typically found in schools.
 - what are the potential health effects.
 - what is the strategy used to solve IAQ problems.
 - what are other factors that influence perception of IAQ problems (T, RH, etc.).
4. The approach used in TfS to prevent and solve IAQ problems.
 - no cost/low cost.
 - why a team is important.
 - why checklists are used.
 - what the results of the checklist will be used for.
 - why conduct a walk-through investigation.
 - what is done with the results of walk-through.
 - how to prioritize any needed repairs.
 - the importance of communication.
 - how using TfS, a school can position itself to get things done to improve IAQ that it itself has determined needs to be done.
 - how the team goes about securing funding for major repairs.
 - tips on how to get parents involved and how to work with the community.
 - the importance of continuing the implementation of TfS every year.
 - opportunities for the team to eventually train other schools in the area.
5. Instruct the team about what is involved in the implementation by going through this implementation guide, meeting by meeting.
6. Reassure the team that consultation and possibly follow up visits are available.
7. Watch *Taking Action* video.
8. Discuss role of each team member and distribution of tasks.
9. Begin filling out the *IAQ Coordinator's* Forms with the information now available (team members' names, some contacts provided by trainer, etc.)
10. Discuss what will happen at second meeting.

1. Start the Checklists Log. (Begin during first meeting as part of training session)

The *IAQ Coordinator's* Forms section contains forms which are used to keep track of all the work the team will do in implementing TfS. Use the forms at each meeting to keep good records of all the items listed. Begin by listing all the people who are on the team (include separate sheets as necessary) and all the people who will receive an Action Packet. Please note that the forms are flexible and that you can modify and/or add your own tailored forms as needed. *The Checklists Log*, for example, will serve as a way of keeping track of all the information that the team has gathered from the checklists survey and will assist you when you continue the implementation of TfS year after year.

The other two forms: *Activating the IAQ Management Plan* and *IAQ Coordinator's Checklist* should be filled out during the course of implementation as information on radon, IPM, and lead is gathered, but most likely you will have to greatly expand on and modify these pages since there is little space for most of the big items such as the Walkthrough Inspection and Upgrade Priorities sections.

The team should begin filling in (as much as possible) the *Checklists Log*, *Activating the IAQ Management Plan* and *IAQ Coordinator's Checklist* at the end of the first meeting following the training session and continue to add information at subsequent meetings as information listed on the forms is collected. As an assignment, each team member should have a chance to read the *IAQ Coordinator's Guide* as well as this implementation guide before the second meeting, and any questions should be forwarded to your trainer.

Note to trainer: In addition to providing the team training on TfS as well as this Implementation Guide, also provide the team EPA information on lead, asbestos, radon, ETS, asthma, combustion products, biological pollutants, and whatever else the school may have issues with. Some EPA regions have school resource guides and these should also be provided. At some point in the training, show the "*Taking Action*" video and remind the team to watch *Ventilation Basics* during its third meeting.

The trainer may suggest to the team to prepare an agenda for each meeting, prepare minutes of each meeting, and appoint a well-organized person to keep a file of all information collected and produced by the team for future use by the school and for potentially training other schools.

Inform the team that they may also want to keep a record of improvements in IAQ over the years of implementation to demonstrate the success of their work, i.e., reduced student and teacher absenteeism, adoption of IPM, changes in the usage of certain cleaning products for better ones, and the institutionalization of better maintenance and operational practices for the ventilation systems, as examples.

Meeting 2 - Assemble Action Packets

2. Distribute the Action Packets. (Performed during second meeting)

Goals: Assemble Action Packets for each staff person in the school and distribute them, inform parents and community about TfS initiative, and discuss how the information will be organized once collected.

As a way of informing and educating the school staff about IAQ as well as gathering information on the current status of IAQ in the school, the teams give each staff person an action packet which consists of an explanatory memo (*Coordinator's Forms* section), background information (*IAQ Backgounder*), and the appropriate checklist for that staff person (See Section 4 of *IAQ Coordinator's Guide*). This activity can take place soon after the first meeting/training session, and a memo should indicate when the checklists are to be returned, normally after 1 or 2 weeks.

The team should schedule its third meeting shortly after this deadline to review the checklists that have been collected, and perhaps a reminder might be issued to those staff who have not responded by the deadline. It is important from the beginning to inform staff that their opinions are valuable and that we're all working together to make improvements in our school environment - everyone is part of the solution!. Encourage staff to even submit additional comments on separate paper together with their checklist since the checklists might not be sufficiently adequate as a communication tool for some people.

It is worth pointing out that the checklists are comprehensive in order to instruct staff about items in their work areas that they might not normally think of as being potential problems. For parents, the team may want to consider holding a meeting at the school to inform them about TfS and also educate them about IAQ issues in the home environment.

Some EPA regional offices have developed residential IAQ checklists to evaluate the home indoor environment for school children. Contact your trainer for ideas on how to run such a meeting and find out who in your town can assist with asthma and environmental education.

The team may also want to inform the local board of health, local media, superintendent's office, PTA, school board, and school advisory board about its plans to implement TfS. There are lots of sample memos in the TfS kit that you can tailor to your needs.

Meeting 3 - Review Checklists and Decide how to summarize information

3. Receive and Summarize the IAQ Checklists. (Performed during third and fourth meetings)

The team's third meeting should be devoted to reviewing the checklists and deciding how best to summarize all the information. Keep in mind that the information from these checklists will form the basis for the IAQ walk-through investigation of the school, so it is important that the information be organized in a manner that highlights the irregularities pointed out in each staff person's work area.

Some schools have made lists of each staff person's work area with the items of most concern summarized, whereas other schools have used floor plans (or copies of blueprints) to show where the staff have indicated IAQ problems. Perhaps you may develop your own system to represent the findings from the checklists. Since the job of reviewing all the checklists may be cumbersome, particularly in large schools, the team may want to seek the assistance of other available parents during this meeting. Contact your trainer for advice if you are having difficulty.

Most schools have found that the process of summarizing and organizing the checklists information takes some time and effort, more than enough for their third meeting. It is suggested that the fourth meeting be used to tie up loose ends with organizing the checklists summaries and that the meeting also be used to discuss the results in general and develop a plan for the walk-through investigation of the school.

Most teams are often surprised at how much information they have collected and how honest staff are about IAQ in their work areas, among possibly other things, too. It is important that the team stay focused on IAQ during this process and that all comments from the staff be weighed in accordance with finding potential pollutant sources in their work areas.

Meeting 4 - Finish Organizing the Checklist Summary and Plan the Walk-through Investigation

While discussing how the walk-through investigation will be conducted during the fourth meeting, keep the guidelines on pages 19 and 20 of the *IAQ Coordinator's Guide* in mind. The intention of TFS at this phase of implementation is for the team to get to know and understand how their school building works as a system, particularly how the ventilation systems operate,

who is responsible for maintenance of each part of the system, when are filters changed and by whom, what are the potential pollutant sources in the building, what outdoor factors can affect IAQ indoors, etc.

Many of these items can be done by the team, especially if the head custodian leads the walk-through of the ventilation system. However, many schools have decided that perhaps it is a good idea to hire (or receive pro bono) the services of a professional ventilation contractor to assist with the walk-through. Your trainer may also have information on free professional assistance, either a state or municipal industrial hygienist or ventilation professional, who can assist with your walk-through.

As a team, you need to decide at your fourth meeting how the walk-through will be conducted for optimum results. If the team does go outside of the school for assistance, the team should send a copy of the checklists summary and a copy of each blank checklist for review before the walk-through to that person. Also, the team should lend a copy of the *Ventilation Basics* Video to that person after the team has watched it so that the walk-through proceeds according to guidelines in TfS.

If the team has the opportunity to receive additional professional training on how to conduct a TfS walkthrough investigation, here is a suggested outline of items that the trainer and team may want to have included.

Prior to Training:

1. Agree on date, time and location of training
2. Finish reading the *IAQ Coordinator's Guide* in its entirety, watch the *Ventilation Basics* video, summarize and finalize checklist results, and update *Coordinator's Forms*.
3. Select in advance which rooms and ventilation units can be used as part of training.
4. Determine which team members will take notes during investigation.

Training Outline (Refer to Walkthrough Inspection Checklist):

1. Investigation Methodology
 - A. Using senses, B. Using equipment
2. Exterior Inspection
 - A. Ground Level, B. Roof, C. Attic
3. Interior Inspection
 - A General Considerations in Classrooms and Other Areas
 - B. Bathrooms and General Plumbing
 - C. Maintenance Supplies
 - D. Combustion Appliances
 - E. Other

Meeting 5 - Walk-through Investigation

4. Perform a Walk-through Investigation (performed during fifth meeting)

Your fifth meeting will be in the form of a walk-through investigation of your school, both inside and outside of the building. The entire IAQ team and anyone else invited (head custodian, town health official, ventilation expert, etc.) should participate in this key event, and one person should be designated by the IAQ Coordinator to lead the investigation and another to write down notes of all findings.

Items needed include: Summary of checklists including either a floor-plan or list of all work areas and classrooms listing occupant reported IAQ irregularities, tools for opening parts of the ventilation system, a flashlight, a notebook to record findings, and, if available, carbon dioxide/carbon monoxide and temperature/relative humidity measurement instruments for spot checks of each classroom and work area when occupied during school hours.

The team should have already been trained about the utility and shortfalls associated with the use of IAQ measurement devices. Remember that all safety precautions should be heeded because parts of ventilation systems (fans, fan belts, motors, oil on the floor, overhead obstacles, exposed electrical wiring, etc.) can pose serious threats.

The walk-through investigation is a comprehensive evaluation of the school building based on the summary of the checklists, what you have learned about IAQ until this point, what you are able to learn by using your senses of sight, smell, feeling and hearing, and also what your measurement instruments may indicate. There are many ways to go about conducting the walk-through investigation, but these steps are the ones that many schools have used with success.

- Plan to spend about 3 minutes per classroom or office, 5 or more minutes for any area that is considered "problematic." If the roof is easily accessible, plan about half an hour or more to check the rooftop parts of the ventilation system, areas of poor rainwater drainage, sewer gas pipe locations, and other items on the Ventilation checklist. Also plan to spend about half an hour walking outside of the school building to evaluate locations of intake air vents for each classroom and for the main air handlers, sources of potential outdoor pollution that can enter the building, and outdoor entrance mats and their effectiveness. The whole process can take from 2 to 5 hours depending on the size of your school, but do not take shortcuts since all the important decisions that the team will make concerning IAQ will be ultimately based on findings from this walk-through investigation.
- Assemble the team and invited participants at a time when school is in session and preferably at a time of the year considered the heating season (if you are meeting roughly once a month, this fifth meeting should fall between December and March). This

scenario should provide the team with a good perspective of IAQ on a day when it is occupied and the school is dependent upon the mechanical ventilation system of the school. Generally, it is said that IAQ is worse during the winter months, so think of your investigation as evaluating the “worse case scenario”, even though this may not be the case.

Also keep in mind that the day you do your walk-through may not be representative of what a typical day is like, so realize that your walk-through results may need to be amended as new information comes forward. Before embarking on the investigation, be sure that someone is taking exhaustive notes of any problems as well as positive things that are mentioned. These notes will be written up and communicated later (discussed later).

- Using the checklists summary (each team member should have a copy), proceed in an organized fashion making sure to evaluate every classroom, office, hallway, work area, closet, air handling room, storage room, supply room, lounge, etc in your school. As a guide for each area, have a copy of the checklists for each area with you because it is possible that a teacher or office worker, for example, may have missed something on their checklist.

Your main goal as investigators, however, is to evaluate the items on the summary pointed out by occupant of that area since the occupant knows his or her area better than anyone else and is most cognizant of what might be a problem. For the ventilation system aspects of the investigation, it is probably best to allow the person with the most expertise to take over at this point and allow him or her to evaluate the system using the ventilation checklist. The expert will not only determine if there are any problems, but should also explain to the team what the function of each part of the system is. Naturally, the system should be turned off prior to removing any panels and safety should be stressed at all times while inspecting these units.

- While conducting the investigation, be generous in re-explaining to teachers and students what you are doing: “Our school’s indoor air quality team is conducting a walk-through investigation of every room in the school to make sure the air you are breathing is the best it can be.” Even remind the children to tell their parents what they saw at school today: “Tell your parents when you get home that there were some experts at our school today who were making sure the air we breathe is clean.” Parents should already know that the investigation is happening that day, but it is always a good idea to remind them.
- If the team has acquired the use of IAQ measurement devices (yes, it looks impressive during an investigation, but you know the story), use them gingerly since you know that the results cannot be definitively relied on. Carbon dioxide levels, temperature and RH change during the course of the day depending upon the level of occupation in a room, the timing of the ventilation system, time of day, etc. However, if at any time a level of

carbon dioxide exceeds 1000 ppm, you can suspect a ventilation problem in that area and that perhaps further testing is needed. Any level of carbon monoxide (CO) above 0 ppm is considered a problem. Your trainer should have instructed you about this or read the Indoor Air Pollution guide in your packet (pp. 7-9).

- By the end of your investigation, you will have learned many new things about your school and will have a nice stack of notes of all your observations, both positive and negative items. These notes need to be written up in a report form for eventual distribution since school staff, parents, the media, the town health department, and even the children will be interested in the results.
- In addition to these results, it would also be advised to prepare a summary of the fire department's report of the school as well as any asbestos, lead, radon, pesticides, UFFI, chemical hazard storage, drinking water quality, underground storage tank, wetland impact, etc. reports on the school for the school community's and town's information. Have these prepared by the sixth meeting.

Meeting 6 - Discussion of Results of the Walk-through Investigation and other Reports, Begin Categorizing Results

The sixth meeting is an opportunity for the team to review all the information that was collected during the walk-through investigation, review the results of any reports that could affect IAQ in school, share experiences about the investigation, and begin the process of addressing the problem areas by prioritizing the problems and developing solutions for improvement.

The product resulting from this meeting will be a written report containing a cover memo re-explaining the purpose of TfS, the steps the team has already taken to address IAQ in their school, a summary of findings (positive and negative) from the walk-through investigation and other pertinent environmental reports, and a indication of what steps will be taken to address the problem areas.

From the IAQ Management Plan section in TfS, the following steps should also be discussed during this meeting:

5. Assess Radon Status

What are the results of the radon tests? Any action required?

6. Assess Pest Control Program

Are pesticides used in our school? For what and when? Can we use IPM?

7. Assess Lead Status

Is there lead paint in our school? Is there lead in our drinking water? What is level of lead in our playground? Any action required?

8. Identify Recent Changes that Affect IAQ

Is there anything discovered during the walk-through investigation that can be explained by changes in and outside the buildings. Has flooding occurred? Is the school used at odd hours such that the operation of the ventilation system does not coincide with those times? Has there been any recent renovation or repair work? Are there outdoor activities that can compromise air quality indoors?

Categorizing Results

In addition to the above items, team members most likely will have a good feeling about what needs to be done, and it is possible that there may be disagreement about what needs to be done first. That is normal in such a sensitive environment like a school. Perhaps it is important to agree that the items to be address can be put into different categories as follows and that further discussion is needed to prioritize the results:

- **Short term goals** - things we can do ourselves at little or no cost within a short time frame.
- **Medium term goals** - things we can do together with assistance from the town or state that might take up to a year at little cost to the school or town.
- **Long term goals** - things that we have determined need to be eventually done but it is a matter of money and make take several years to be completed and that we may need to draw on professional assistance.

Examples:

Short term goals: Have buses park away from fresh air intakes, have trash picked up at the end of the day as opposed to in the morning (IPM guideline), don't allow supply trucks to idle near fresh air intakes, don't place dumpsters near intakes, replace worn floor mats with more effective ones, get rid of useless chemical hazards in the closets, replace harmful cleaning products with better ones, replace ventilation filters at least quarterly, don't allow staff to bring in their own cleaning products and pesticides, don't allow the uncertified use of pesticides in the

school, have the fire department check all heating appliances for CO when they conduct their annual fire safety evaluation, hold a training seminar on IAQ and asthma in schools/ residences for teachers and parents, etc.

Medium term goals: Work with your state radon contact in testing your school for radon and devising a plan for remediation if there is a problem, work with your state pesticides contact in adopting IPM in your school, work with your town's purchasing office or state purchasing contractor in procuring safer cleaning products, low VOC emitting furniture and equipment, energy efficient lighting, and low formaldehyde containing materials for use during renovation. In addition, involve the town health department or a state industrial hygiene office in determining what repairs or upgrades are needed for the ventilation system, if the duct work needs replacing or cleaning, and if every part of the building is receiving adequate ventilation and at a proper temperature.

Long term goals: Work with your town's governing body and capital planning department and the state's department of education to seek funding to upgrade the ventilation system, repair or replace the badly leaking roof, remove all worn or moldy carpeting and replace it with an easily maintained and low VOC flooring material.

Using the above examples or something similar, the team should be able to organize the IAQ problems discovered during the walk-through, brainstorm possible solutions, make tentative agreements about how the major IAQ problems should best be addressed, write up a communication piece, and distribute this report following the meeting to your stakeholder mailing list (school staff, parents, media, town officials, etc.)

It is also a good idea to keep your trainer and your EPA contact apprized of your work at every step of the way by including them in your communication strategy. If the news is generally good, that is, the school's IAQ is in good shape and that there are no major problems, then let everyone know.

If, however, the team has determined that there are significant problems, it is still important to let all concerned know about the problems and what the proposed solutions are. Such a report may be hard for parents, school officials and town officials to accept at first, but it is a far better strategy to be candid than attempting to sweep any problem under the rug.

Schools that have had problems with IAQ and are using TfS position themselves to avoid liability problems by focusing on solving IAQ problems and making improvements in school staff's and children's health. IAQ problems that are not addressed and IAQ complaints that are ignored, given the existence of TfS and the available resources, could be construed as negligence by a court of law.

Meeting 7 - Developing Repair Priorities and Gaining Consensus

9. Set Repair and Upgrade Priorities (Seventh Meeting)

The seventh meeting should be focused on what repairs and upgrades, if any, need to be done and by when, who will do the work, what specifications will be followed, and how will all the work be funded. A good starting point for the team may be to develop a chart of IAQ problems which contains information on how it is prioritized, the time table involved, cost of solving the problem, etc. **An example could look something like this:**

IAQ Problem	Priority	Action	Completed By?	Responsible party	Cost
Bus fumes from parking area	High, Cat. A	Relocate Bus area	Start in March	Bus Drivers	\$0
Moldy carpeting in Room 202.	High, Cat. C	Replace w/ Floor tiles	End of Summer	School Main. Dept., Contractor	\$2000
High VOC floor stripper	Medium, Cat. B	Replace w/alternative	Start using in new school yr	School custodian/purchasing office	\$200

Determining how to prioritize IAQ problems can involve hours of discussion. There may be disagreement about whether the reported health effects from a certain situation are real or perceived, or if the IAQ problem is best handled by the school or should outside assistance be called upon. Using the examples of other schools, the following suggestions can be helpful.

- Any IAQ problem that can be classified in Category A (defined above) could be done immediately without too many hurdles especially if the principal is the IAQ coordinator and it does not cost the school anything beyond normal expenditure, independent of how it is prioritized as a problem. For example, the staff refrigerator has some mold growing and stagnant water in the drip pan and the problem is classified as high (meaning a significant source of pollution) and category A (meaning: we can have that taken care of by ourselves). The plan would be to have the staff who use the refrigerator organize a sign up sheet for cleaning the interior and drip pan of the refrigerator on a monthly basis.

- Any IAQ problem classified in Category B or C which would involve assistance from outside the school community needs to be ranked according to how serious the problem is as far as health effects are concerned or even how much the problem has been complained about. It is best to proceed from what is known about the health affects associated with certain indoor air pollutants.

For example, we know that elevated levels of carbon monoxide can cause severe health problems, even death, if it is not taken care of, so any problems associated with this pollutant in a school should be dealt with immediately and by professionals. Other pollutants that we generally classify as "asthma triggers" may not cause any health problems in some individuals, but for asthmatics, exposure to significant levels of dust mite and cockroach particles, mold spores, environmental tobacco smoke (ETS), and certain VOCs could cause very serious health problems.

Schools need to be aware of the needs of environmentally sensitive individuals before prioritizing IAQ problems that need to be solved. Once the "high priority" concerns have been identified based on what IAQ problems can potentially cause serious health problems, then you begin to prioritize the IAQ problems that are considered medium and low priorities. These are often called "comfort issues", and in some cases these can seem to outweigh what are clinically considered real health concerns.

Examples of comfort issues are: temperature control, inadequate lighting, lack of air movement, certain odors, low humidity, etc. In some cases comfort concerns are given high priority status particularly if complaints are received, but usually complaints like "it's too warm" or "it's too dry" or "the odor from the farm next door is back" are temporary conditions that need to be addressed as the situation arises.

- Since the science of IAQ does not have all the answers, treat complaints as real IAQ problems even in the absence of perceivable IAQ sources. In some cases outside professional assistance may be necessary in determining whether reported illnesses, long standing complaints about IAQ, or long absences from school are the results of poor IAQ in the school or home environments, multiple chemical sensitivity, mental illness, or job dissatisfaction.

10. Gain Consensus and Approvals (topic covered during seventh meeting)

It is important that for each item listed in the table, there should be consensus and approval for each action the team suggests, particularly if it involves changes to school staff's performance description, costs beyond normal school expenditure, and negotiating services from the town or state.

This should be an important topic covered during your meeting, especially at this juncture

because of the potential costs associated with repairs and upgrades to your school. Attempt to get approval in writing as much as possible.

11. Distribute Status Report (after seventh meeting)

After the list of IAQ problems and action items for each problem has been finalized, this list or chart should be communicated to everyone the team has been keeping in the loop the whole time. Although this is the first time in the TfS kit that distributing a report is mentioned, this status report could easily be your third or fourth report to be communicated.

By now, the school community and parents should have all received the explanatory memo announcing the schools' adoption of TfS, a summary report of the checklist evaluations, and a summary report of the walk-through investigation including information of other environmental reports. Following the status report of action taken on IAQ problems, the final report for the school year should be a summary of what has been achieved and what further still needs to be done (Step 17).

12. Perform Repairs and Upgrades (starting after seventh meeting)

Most of the action items identified by the team, if the team has good delegation authority, could be carried out by other members of the school community, city employees and state employees, contractors, and others. Because the team has gone through the consensus and approval process and has been in contact with those responsible for taking action on specific IAQ problems, it should be a matter of contractual or verbal agreement that all or most of the items be completed according to the timetable set forth by the team.

This is the ideal world and chances are, there will be some shortcomings. Either there is no money available to install a new segment of duct work to provide more air to a classroom or there is no consensus where to relocate a copying machine that has been emitting particles and VOCs or a teacher refuses to get rid of small mammals (dander is an asthma trigger) in his or her classroom because of their educational benefit, etc. It is normal to face such obstacles in carrying out the action items.

In most cases, educating the key players about IAQ and the health effects associated with indoor air pollutants can motivate most individuals to see why it is in the interest of everyone to abide by the new IAQ policies.

Meeting 8 - Wrap-up Meeting

The final TfS meeting of the school year affords a time for the IAQ team to consider all that has been learned and accomplished since adopting TfS and its standard of environmental care for the school. By this meeting, the team should have had a first hand look at the ongoing action

taken to address any identified IAQ problems in the school, whether it be a plumbing repair and the replacement of molding ceiling tiles, the use of a new policy preventing the purchase of any new furniture containing formaldehyde, or the vacuuming out and repair of all unit ventilators. Here are some of the items (Steps 13-19) that can be addressed during this meeting:

13. Conduct Follow-up Inspections:

Determine if the repairs and upgrades listed on the IAQ problem/Action Item chart have been performed or are being performed according to the specifications set forth by the team. For action items that involve substantial expenditure and/or time, ensure that these items remain on the front burner during the budgeting process for the school.

14. Develop a Schedule of IAQ Events:

Since the team may have learned that events such as improperly contained repair or renovation work during school hours can affect IAQ in dramatic ways, the team may want to develop of schedule of events to keep school personnel and students aware of situations that could affect IAQ. The schedule may also contain dates of IAQ team meeting dates, dates set aside for school staff and parent training on IAQ, dates and times that the school ventilation system needs to run longer because of occupancy at those times, and dates during the summer if the school is closed up in order to check on mold growth and pest problems.

15. Assess Problem-Solving Performance

In addition to the points mentioned on pp. 21 and 22 of the Coordinator's Guide, the team should be monitoring how well the action items assigned to each IAQ problem are coming along. Concise written reports from those responsible for solving each problem might be a good idea since the problem may recur at some point and the team will have information on what worked and what didn't work.

16. Establish and Update IAQ Policies

Appendix D in the Coordinator's Guide contains a number of sample IAQ policies, but these will only serve a good purpose if they are circulated to staff, especially newly hired staff, posted on an information bulletin board, and revisited yearly by the IAQ team. Examples of policies not mentioned in TfS, but could be useful are: cleaning products purchasing guide, furniture and supplies purchasing guide, pesticides use policy, filter replacement policy, policy on what products are disallowed from school (strong perfumes, favorite pesticides, certain brands of magic markers, etc.), policy on maintaining the school's ventilation system, etc.

17. Distribute Summary Report

This is the team's year-end report to school staff, parents, the media, town health office, school board, EPA, and whoever else has been previously informed of the school's activities with TfS.

Besides the information listed on page 22 of the Coordinator's Guide, most recipients of the report probably want to know one thing: "So, what has been the benefit of implementing TfS?"

Hopefully the work of the team has paid off in terms of reducing absenteeism, preventing asthma attacks at school, providing noticeably cleaner and fresher air, reducing the amount of pesticides used, switching a carcinogen-containing cleaner for one that is safer and equally effective, keeping bus and truck exhaust from entering the building, installing a radon mitigation system, developing an emergency response policy, getting rid of outdated chemical reagents from the lab, testing for airborne mercury, repairing a plumbing problem, and installing a carbon monoxide detector in the boiler room, to name a few examples.

Naturally, you also want to mention what the team plans to do next year: Continue implementing TfS, resurvey the school staff about IAQ, conduct another walk-through investigation, secure funding to replace the leaking roof which is already 25 years old, replace all the old and smelly carpeting with new and safe flooring material, host a training workshop for other school in your area who are interested in implementing TfS, etc.

18. Check Contact Lists

The "Local IAQ Service Providers List", page 10 of 14, in your Coordinator's Form needs to be kept updated. Be sure to include your regional EPA contact, your TfS trainer, and a copy of your mailing list that you used when distributing your TfS reports.

19. File Checklists, Reports, and Notes

Page 22 has a good list of items that need to be filed in. It is recommended that the IAQ Coordinator (principal), as well as the city department of health, each have a copy of these files, and that these files be used when the next implementation cycle of TfS commences in the new school year. The team certainly wants to build on the successes from the previous year and maintain the progress that has been made so far in institutionalizing TfS in their school

At the end of the school year, EPA and its TfS partners wish to acknowledge schools that have been successful in implementing TfS. Your trainer should have informed you at some point about EPA's award program for schools, so be sure to keep your trainer and EPA informed of your progress throughout the year.

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